

Remarks

1. Claims 34, 38, and 71-73 have been amended.
2. Claims 1-5, 11-30, 33, 35, 37-40, 47-52, 68-70, 74 and 76-78 remain in this application.
3. Claims 31, 32 and 53-57 have been canceled to reduce the number of claims for this application.
4. Claims 36 and 75 have been canceled to avoid potential “double patenting” issue with the continuation-in-part (CIP) application Serial Number 10/338,151 for this parent application.

Sincerely yours,



Edward Z. Cai

Applicant

Version with Markings to Show Changes Made**In the claims:**

Claims 31 and 32 have been canceled.

Claim 34 has been amended as follows:

34. (Amended) A cartridge for use with an apparatus for making fluid comestibles under pressure with pressurized liquid comprising:

 a predetermined amount of a water-soluble flavor-containing materials, said water-soluble flavor-containing materials being mostly soluble in the pressurized liquid;

 a predetermined amount of an extractable flavor-containing materials, said extractable flavor-containing materials being mostly insoluble in the pressurized liquid but containing flavors extractable by the pressurized liquid;

 a chamber for containing said predetermined amounts of water-soluble and extractable flavor-containing materials and for allowing the interaction of the pressurized liquid with said water-soluble and extractable flavor-containing materials therein to produce the fluid comestible;

 a cartridge inlet for allowing the pressurized liquid to enter said chamber;

 [**a filter for said extractable flavor-containing materials and having numerous filter openings permeable to the pressurized liquid and sufficiently small to prevent said extractable flavor-containing materials from passing through, said filter being adapted to separate said water-soluble flavor-containing materials from said extractable flavor-containing materials, thereby restricting intermixing and potential interactions between said water-soluble and extractable flavor-containing materials;**]

 a cartridge outlet for the fluid comestible produced in said chamber; and

 a separator located below both said water-soluble and extractable flavor-containing materials in said chamber but above the lowest part of said cartridge outlet for keeping said flavor-containing materials above said separator, said separator having a plurality of separator openings adapted to be sufficiently large to prevent complete clogging of said separator by non-fluid materials including gel materials resulting from the interaction of said water-soluble flavor-containing materials with the pressurized liquid, thereby maintaining said separator sufficiently permeable to the fluid comestible during the process of making the fluid comestible from said cartridge.

Claim 36 has been canceled.

Claim 38 has been amended as follows:

38. (Amended) A cartridge as defined in claim 34 further comprising a [second] filter for said [water-soluble] extractable flavor-containing materials.

Claims 53-57 have been canceled.

Claims 71, 72 and 73 have been amended as follows:

71. (Amended) A cartridge for use with an apparatus having a mounting head for making fluid comestibles with pressurized liquid under pressure comprising:

a supply of a suitable flavor-containing materials for the production of fluid comestible;

a filter for said flavor-containing materials;

a lower rigid chamber body comprising a bottom end, a top end, and a cartridge outlet formed at said bottom end for discharging the beverage produced from said flavor-containing materials; and

an upper rigid chamber body comprising a top end, a bottom end connected to said top end of said lower rigid chamber body to form a closed rigid chamber for said supply of a suitable flavor-containing materials, and a cartridge inlet formed at said top end of said upper rigid chamber body for forming a hermetic seal with the mounting head and to introduce pressurized liquid from the mounting head into said [upper] closed rigid chamber, said cartridge inlet having a sufficiently small cross-section area to lower the force exerted by the pressurized liquid to said cartridge inlet thereby improving said hermetic seal and preventing leakage and breaking of said hermetic seal, whereby, in use, said cartridge inlet is engaged with the mounting head to form said hermetic seal to allow the pressurized liquid to be introduced into said closed rigid chamber[s] wherein [it] the pressurized liquid interacts with the flavor-containing materials to form the beverage.

72. (Amended) A cartridge as defined in claim 71 wherein both said lower and upper rigid chamber[s] bodies are formed from a sheet material [such as polyester, polypropylene or aluminum sheet] by at least one of mechanical forming, thermoforming and a combination of mechanical forming and thermoforming.

73. (Amended) A cartridge as defined in claim 71 wherein said cartridge inlet is recessed into said upper chamber body to form a miniature chamber for receiving at least the bottom end of the mounting head [further comprising a second flavor-containing materials and a second filter for said second materials, said second flavor-containing materials being maintained above said second filter and below said filter and said supply of a suitable flavor-containing materials].

Claim 75 has been canceled.

Remarks

1. Claim 67 has been canceled. Applicant has corrected his mistake in both the clean and marked-up versions by not re-using the number "67".
2. A new dependent claim to parent claim 70 has been added. Applicant has corrected his mistake in both the clean and marked-up versions by re-numbering this new dependent claim as "claim 78" rather than "claim 71".
3. Claims 2, 7, 8, 11, 14, 20-22, 24, 26, 30-33, 35, 37, 40, 52-65 remain in this application. These claims are not repeated since no changes are made to them.
4. Claims 1, 3-6, 9-10, 12-13, 15-19, 23, 25, 27-29, 34, 36, 38-39, 41-51, 66, 68-77 have been amended.

Sincerely yours,

Edward Z. Cai, applicant

A marked-up version for the amended claims filed on 12/18/2001:

1. (Amended) A cartridge for use with an apparatus having a mounting head for making fluid comestibles such as coffee, espresso, cappuccino, latte, tea, filtered water, hot chocolate, milk, soup or herb comprising:

a cartridge inlet for forming a hermetic seal with the mounting head and introducing liquid under pressure from the mounting head into said cartridge;

a chamber connected to said cartridge inlet for containing suitable flavor-containing or particle materials and for allowing the interaction of the flavor-containing or particle materials with the liquid from said cartridge inlet under pressure therein to produce the fluid comestible;

a cartridge outlet connected to said chamber for discharging the fluid comestibles produced in said chamber; and

a handle [allowing a user to hold said handle to attach and secure] for facilitating the mounting of said cartridge [inlet] to the mounting head, said handle comprising at least part of the wall of said chamber, said at least part of the wall of said chamber being sufficiently rigid and adapted for the user to hold without causing substantial deformation or damage during the mounting of said cartridge to the mounting head.

3. (Amended) A cartridge as defined in claim 1 wherein said cartridge inlet has a cross-section area significantly smaller than said chamber to reduce the force exerted by the pressure in said chamber to [said cartridge inlet, thereby lowering the risk of breaking] said hermetic seal.

4. (Amended) A cartridge as defined in claim 1 wherein said cartridge outlet comprises a restrictive opening such as an orifice for forming a high-speed fluid jet [or stream], said restrictive opening being arranged to allow the high-speed fluid [stream or] jet to interact with air when or before the fluid is received in a receptacle [such as a cup or carafe], thereby generating a foamy head or crema for the fluid comestible.

5. (Amended) A cartridge as defined in claim 1 wherein said cartridge outlet comprises a restrictive opening such as an orifice for producing a fluid jet [or stream] of sufficiently high speed and an arrangement for the fluid jet or stream to inject into a receptacle such as a cup or carafe to produce a foamy head or crema therein.

6. (Amended) A method for using the cartridge as defined in claim 1 to make fluid comestibles comprising a step of holding said handle of said cartridge and mounting [to secure] said cartridge [inlet] to the mounting head; [and] a step of causing the liquid to be delivered under pressure through the flavor-containing or particle materials in said chamber and through said cartridge outlet and directly into a receptacle such as a cup or carafe for consumption without contaminating the apparatus with the fluid comestibles, and a step of

removing and disposing said cartridge, thereby simplifying the preparation of the fluid comestibles and relieving the user from the tedious cleaning work after preparing the fluid comestibles.

9. (Amended) A method for using the cartridge as defined in claim 1 to make fluid comestibles as defined in claim 6 wherein the mounting head is movable or hand-held.

10. (Amended) A method for using the cartridge as defined in claim 1 to make fluid comestibles as defined in claim 6 wherein said step of holding said handle and mounting said cartridge to the mounting head comprises a step of causing an extension tube at the mounting head to be inserted into said cartridge inlet and a step of rotating said cartridge to lock said cartridge inlet to the mounting head under the guide of the extension tube [the mounting head is fixed in position].

12. (Amended) A cartridge as defined in claim 1 further comprising a plurality of protrusions such as vertical ridges, ribs or spherical dots on the outer surface of said chamber to facilitate the connection and removal of said cartridge to and from the mounting head and/or to make the user feel cooler when holding said at least part of the wall of said chamber of said handle.

13. (Amended) A cartridge as defined in claim 1 wherein said cartridge outlet is dimensioned to fit into the cartridge inlet, or vice versa, of another said cartridge, thereby allowing a plurality of said cartridges to be connected to each other to facilitate the storage or packaging of the cartridges.

15. (Amended) A cartridge as defined in claim 14 wherein said cartridge inlet further comprises a cylindrical opening dimensioned to receive a tubular extension on the mounting head for guiding the mounting of said cartridge inlet to the mounting head [to form water-tight seal between said cylindrical opening and the tubular extension when said first and second lock elements are engaged].

16. (Amended) A cartridge as defined in claim 14 wherein said first lock element comprises a protruded member on said cartridge inlet [flange] such as a circular flange having at least one cut or a spiral- or helix-shaped ridge [a non-circular flange] for engaging with the second lock element which [may] comprises one or more protrusions such as spiral- or helix-shaped ledges or ridges on the inner surface of a substantially cylindrical chamber of the mounting head, said protruded member [flange] and the second lock element [protrusion] being so configured that rotation of said cartridge inlet causes it to move into or out of the substantially cylindrical chamber.

17. (Amended) A cartridge as defined in claim [16] 1 wherein said cartridge inlet [or flange] comprises a safety element adapted to engage with a counterpart on the mounting head for preventing the removal of said cartridge from the mounting head when the pressure in said chamber is sufficiently high.

18. (Amended) A cartridge as defined in claim 1 further comprising a filter for the flavor-containing or particle materials in said chamber and a barrier film located below said filter and breakable by

the fluid coming from said filter for impeding the transport of molecules such as aroma, moisture or oxygen between said chamber and atmosphere.

19. (Amended) A cartridge as defined in claim 1 wherein said cartridge inlet, chamber, cartridge outlet and said filter are made from the same or similar material such as polyester, polypropylene or nylon to facilitate the recycle or reuse of the material thereby reducing the burden to environment.

23. (Amended) A cartridge as defined in claim 1 further comprising barrier film for sealing said cartridge outlet, said barrier film being adapted to be removable by a user or breakable by pressure [the fluid comestibles].

25. (Amended) A cartridge as defined in claim 1 wherein said cartridge inlet comprises a substantially cylindrical opening having a narrower section near its lower part for facilitating the attachment of a barrier film, which is adapted to be breakable by force or the liquid, to the wall of said cylindrical opening around said narrower section to [cover] seal said cartridge [inlet].

27. (Amended) A cartridge as defined in claim 1 further comprising a valve located in said cartridge inlet for preventing or impeding the liquid or flavor-containing materials in said chamber from gushing out of said cartridge inlet in case that [the user removes the cartridge] the cartridge is separated from the mounting head when [the] there is pressure in the cartridge [is high].

28. (Amended) A cartridge as defined in claim 1 further comprising a piece of porous material such as bonded or unbonded fibers, foam or cloth above said the flavor-containing or particle materials for restricting the flavor-containing or particle materials from moving out of said chamber.

29. (Amended) A cartridge as defined in claim 1 further comprising a valve in said cartridge inlet or cartridge outlet to stop the dripping of the residual fluid in the cartridge prior to or during the removal of the cartridge, said valve comprising an opening that is closed or sufficiently small when the cartridge is removed from the mounting head or when the pressure upstream [is] becomes sufficiently small.

34. (Amended) A cartridge for making fluid comestible such as coffee, espresso, cappuccino, latte, tea, hot chocolate, milk, soup or herb comprising:

a cartridge inlet for the introduction of pressurized liquid into said cartridge;

a first flavor-containing materials;

a filter permeable to the liquid for preventing said first flavor-containing materials from passing through;

a second flavor-containing materials separated from said first flavor-containing materials by at least said filter, thereby preventing intermixing and potential interactions between said first and second flavor-containing materials;

at least one [a] chamber for containing said first and second flavor-containing materials and for allowing the interaction of the pressurized liquid with said first and second flavor-containing materials therein;

a cartridge outlet for discharging the fluid comestible produced from said first and second flavor-containing or particle materials; and

a separator located in or above said cartridge outlet but below said first and second flavor-containing materials in said at least one chamber, said separator having numerous small openings to allow said fluid comestibles to pass through.

36. (Amended) A cartridge as defined in claim 35 wherein said first flavor-containing materials is maintained above [substantially enclosed by] said filter and said second flavor-containing material is contained in the space between said [first flavor-containing materials] filter and said separator.

38. (Amended) A cartridge as defined in claim 34 further comprising a second filter for said second flavor-containing materials in said at least one chamber.

39. (Amended) A cartridge as defined in claim 34 wherein said separator is a relatively coarse filter compared to said filter to prevent the clogging of said separator by gels or the like produced from said second flavor-containing materials [38 wherein said first flavor-containing materials is enclosed by said filter and said second flavor-containing material is enclosed by said second filter].

41. (Amended) A method for the preparation of fluid comestibles from a disposable cartridge comprising a cartridge inlet, a cartridge outlet, a handle, a chamber and one or more flavor-containing or particle materials such as coffee grounds, tea, chocolate, cocoa, filtration materials, soup powder or granular milk in the [a] chamber and a drink making machine having a mount head, which method comprising:

holding the handle to place the disposable cartridge to the mounting head;

aligning the [said] cartridge inlet with a liquid outlet of the mounting head which is in communication with a pressurized water source [with the aid of said handle];

[forming a watertight seal between said cartridge inlet and said mounting head with the aid of said handle];

locking the [said] cartridge inlet to the [said] mounting head to form and maintain [said] a water-tight seal between the cartridge inlet and mounting head [with the aid of said handle]; [and]

introducing the pressurized water from the liquid outlet [said mounting head] into the [said] chamber wherein the pressurized water interacts with the [said] flavor-containing materials or particle materials[, thereby forming] to produce the fluid comestibles;

discharging the fluid comestibles from the cartridge outlet of the disposable cartridge directly into a receptacle such a cup or carafe in such a way that the fluid comestibles produced does not contact or touch

any part of the drink making machine, which makes the disposable cartridge the only part that is contacted or contaminated by the fluid comestibles, thereby relieving the user from the traditional, tedious cleaning work required after making fluid comestibles.

42. (Amended) A method as defined in claim 41 wherein said aligning step comprises causing an extension tube, which has a lower part visible to the user and readily receivable in the [said] cartridge inlet, on the [said] mounting head to enter the [said] cartridge inlet, thereby facilitating the locking step by providing guidance for the movement of the [guiding said] cartridge inlet relative to the [into said] mounting head.

43. (Amended) A method as defined in claim 41 wherein said [forming and] locking step[s] comprises holding said handle to rotate the [said] cartridge inlet relative to the [said] mounting head until such rotation becomes tight enough.

44. (Amended) A method as defined in claim 41 wherein said [forming and] locking step[s] comprise causing a needle having a fluid channel [secured to] at the [said] mounting head to penetrate a elastomer septum [secured to] in the said cartridge inlet.

45. (Amended) A method as defined in claim 41 wherein said locking step comprises pushing a latch or pin by a spring or other mechanism in the mounting head toward the [said] cartridge inlet to engage with a fixture such as a notch or flange on the [said] cartridge inlet.

46. (Amended) A method as defined in claim 41 wherein the handle of the disposable cartridge comprises the side wall of the chamber, the side wall of the chamber being substantially rigid to function as a handle for the disposable cartridge [further comprising discharging the fluid comestibles from said cartridge outlet directly into a receptacle such as a cup or carafe without contacting any other items, thereby relieving the user from tedious cleaning work after preparing the fluid comestibles].

47. (Amended) A cartridge for making fluid comestibles such as coffee, espresso, cappuccino, latte, tea, hot chocolate or milk comprising:

a cartridge inlet for the introduction of pressurized liquid into said cartridge;

a chamber for containing one or more flavor-containing materials such as coffee grounds, tea, cocoa, chocolate or granular milk for the fluid comestibles and for allowing the interaction of the pressurized liquid with said flavor-containing materials therein;

a collector for collecting the fluid comestibles produced from the flavor-containing materials;

a restrictive opening such as an orifice for converting the fluid comestibles in said collector into a high-speed fluid [stream or] jet;

a filter located upstream of said restrictive opening for protecting said restrictive opening from being clogged by the flavor-containing materials or foreign solid or gel materials; and

an arrangement for the high-speed fluid [stream or] jet to interact with air when or before the fluid comestibles is received in a receptacle such as a cup or carafe, thereby generating foamy head or crema for the fluid comestibles.

48. (Amended) A cartridge as defined in claim 47 further comprising at least one additional restrictive opening, said restrictive openings being so constructed that the resulting high-speed fluid [streams or] jets meet or collide in the space, thereby generating foamy head or crema for the fluid comestibles.

49. (Amended) A cartridge as defined in claim 47 wherein said arrangement allows the high-speed fluid [stream or] jet from said restrictive opening to collide or interact with a solid surface such as the inner wall of said cartridge outlet, thereby producing foamy head or crema for the fluid comestible.

50. (Amended) A cartridge as defined in claim 47 further comprising a outlet chamber below said restrictive opening for receiving the high-speed fluid [stream or] jet and causing the mixing of air with fluid in said outlet chamber, thereby producing fine air bubbles, said outlet chamber having at least one opening for discharging the fluid and fine air bubbles.

51. (Amended) A cartridge as defined in claim 47 wherein said arrangement allows the high-speed fluid [stream or] jet from said orifice or restricted opening to inject directly into the receptacle such as a cup or carafe, the high-speed fluid stream or jet carrying the surrounding air into the fluid comestibles in the receptacle such as a cup or carafe thereby generating foamy head or crema for the fluid comestibles.

66. (Amended) A cartridge for use with a holder having an open upper end and a large opening at its bottom in an apparatus such as an espresso machine or coffee maker to make beverage or drink such as coffee, espresso, cappuccino, latte, tea, filtered water, hot chocolate, milk, soup or herb, which comprising:

a chamber adapted to be received in the holder, said chamber having a generally open upper end and a generally closed lower end ;

a flange formed at said generally open upper end of said chamber, said flange being adapted to be supported by the holder to form a seal with the brew head of the apparatus;

a filter sealed at its peripheral to said flange and conformed partially to said chamber to form a cavity above said filter and a fluid collection space between said filter and said generally closed lower end of said chamber

suitable flavor-containing or particle materials such as coffee grounds, tea, chocolate, cocoa, solid milk, herb or filtration materials in said cavity formed by said filter;

a cover sealed to said flange for maintaining said flavor-containing or particle materials in said cavity; and

a cartridge outlet formed at said generally closed lower end of said chamber for discharging the drink, said cartridge outlet being adapted to [fit in or directly above the large opening at the bottom of the holder so that the beverage is discharged] discharge the beverage directly into a receptacle such as a cup or carafe without

contacting or contaminating the holder, thereby relieving the user from the tedious work of cleaning the holder and apparatus after preparing beverages.

Claim 67 has been canceled.

68. (Amended) A beverage cartridge for use with a beverage apparatus having a mounting head comprising:

a flavor-containing or particle materials such as coffee grounds, tea, chocolate, cocoa, solid milk, herb or filtration materials;

a chamber for containing said flavor-containing or particle materials;

a cartridge outlet for the beverage; and

a cartridge inlet having an opening and a elastomer septum secured to or in said opening to seal said cartridge inlet, said elastomer septum being adapted to be penetrated by a rigid, elongated thin member such as a needle on the mounting head for introducing pressurized liquid from the mounting head to said flavor-containing or particle materials in said chamber wherein the pressurized liquid interacts with said flavor-containing or particle materials to produce the drink and to apply sufficient force to said rigid elongated thin member such as a needle to prevent said thin member such as a needle from being pushed out by the pressure in said chamber.

69. (Amended) A cartridge connector as defined in claim [68] 67 wherein said septum comprises a normally closed opening for facilitating the penetration of [the] said thin member such as a needle through said septum.

70. (Amended) A beverage cartridge for use with a beverage apparatus having a mounting head comprising:

suitable flavor-containing or particle materials such as coffee grounds, tea, chocolate, cocoa, solid milk, herb or filtration materials;

a rigid chamber adapted to function as a handle for a user to hold to mount the cartridge to the mounting head without substantially deforming said rigid chamber and for containing said flavor-containing or particle materials;

a cartridge outlet for the beverage; and

a cartridge inlet for forming a hermetic seal with the mounting head of the beverage apparatus and for introducing [the introduction of] pressurized liquid from the mounting head to said flavor-containing or particle materials in said rigid chamber wherein the pressurized liquid interacts with said flavor-containing or particle materials to produce the beverage, said cartridge inlet [is] being adapted to have a cross-section area significantly smaller than said rigid chamber [to] for facilitating the formation of said hermetic seal and reducing the force exerted by the pressurized liquid to said hermetic seal or said cartridge inlet, thereby

preventing [lowering the risk of personal injury caused by] leakage or breaking of said hermetic seal [the dislodging of said cartridge from the mounting head].

71. (Amended) A cartridge for use with a beverage apparatus having a mounting head to make beverage such as coffee, espresso, cappuccino, latte, tea, filtered water, hot chocolate, milk, soup or herb comprising:

suitable flavor-containing or particle materials such as coffee grounds, tea, granular milk, filtration materials, coca, soup powder or herb for the production of the beverage;

a filter for said flavor-containing or particle materials;

a lower rigid chamber [body] comprising [an lower chamber having a generally closed] a bottom end, [and] a [generally open] top end, [a first flange formed at said generally open end,] and a cartridge outlet formed at [the generally closed] said bottom end for discharging the beverage produced from said flavor-containing or particle materials; and

an upper rigid chamber [body] comprising [an upper chamber having a generally closed] a top end, [and] a [generally open] bottom end connected to said top end of said lower rigid chamber, [a second flange formed at said generally open end,] and a cartridge inlet formed at [the generally closed] said top end of said upper rigid chamber, [said cartridge inlet having a sealing surface] for forming a hermetic seal with the mounting head [and a liquid opening located near the center part of said sealing surface for introducing the] to introduce pressurized liquid from the mounting head into said upper rigid chamber, said filter being attached to said bottom end of said upper rigid chamber to maintain said flavor-containing or particle materials above said filter [said upper and lower bodies being sealed together at said first and second flanges to form a chamber to contain said flavor-containing or particle materials], said cartridge inlet [liquid opening] having a sufficiently small [size] cross-section area to lower the force exerted by the pressurized liquid to said cartridge inlet [the hermetic seal] thereby improving [the] said hermetic seal and preventing leakage or breaking of said hermetic seal, whereby, in use, said [sealing surface of said] cartridge inlet is [brought against] engaged with the mounting head to form [the] said hermetic seal [around said small liquid opening thereby allowing] to allow the pressurized liquid to be introduced into said rigid chambers wherein it interacts with the flavor-containing or particle materials to form the beverage.

72. (Amended) A cartridge as defined in claim [67] 71 wherein said [first chamber and said second] lower and upper rigid chambers are formed from sheet material such as polyester, polypropylene or aluminum sheet by mechanical forming, thermoforming or a combination of mechanical forming and thermoforming.

73. (Amended) A cartridge as defined in claim [67] 71 further comprising a second flavor-containing materials and a second filter for said second materials, [at least one said first and] said second flavor-containing materials being maintained above said second filter and below said filter [a water-soluble materials, the filter for said water-soluble materials comprising larger openings than the other filter].

74. (Amended) A cartridge as defined in claim [67] 71 wherein said lower and upper rigid chambers are produced by blow molding [the peripheral of said filter is adapted to be heat-sealed to said upper or lower body].

75. (Amended) A cartridge as defined in claim [67] 71 further comprising a water-soluble materials and a second filter attached to said bottom end of said rigid lower chamber for maintaining said water-soluble materials above said cartridge outlet, said second filter having relatively large openings for preventing clogging by gels or other matters formed from said water-soluble materials [wherein said cartridge inlet is recessed into said upper chamber to form a miniature chamber for receiving the mounting head and to form said sealing surface].

76. (Amended) A cartridge as defined in claim [67] 71 wherein said cartridge outlet comprises at least one restrictive opening such as orifice for forming at least one fluid jet, said at least one restrictive opening being arranged to allow the fluid jet to interact with air to generate foam or crema for the fluid comestible [said cartridge inlet is protruded above said upper chamber to form a miniature chamber receivable in the mounting head and to form said sealing surface].

77. (Amended) A cartridge as defined in claim [67] 71 wherein said cartridge outlet comprises a restrictive opening such as an orifice, said restrictive opening [orifice] being adapted to form a fluid jet [or stream] at sufficiently high-speed that a foam head or crema is generated when the fluid jet or stream is received in a receptacle such as a cup or carafe.

Please add the following new claim:

78. A cartridge as defined in claim 70 wherein said rigid chamber comprises a side wall for the user to hold, said side wall having protrusions such as ridges or ribs on its outer surface or having sufficient thickness to reduce heat conduction from the pressurized liquid inside said cartridge to user's hand, thereby preventing the user from being burned by heat when the user holds said rigid chamber to remove said cartridge from the beverage apparatus.